

Ionospheric Data Report — February 1965

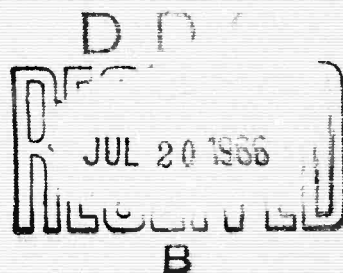
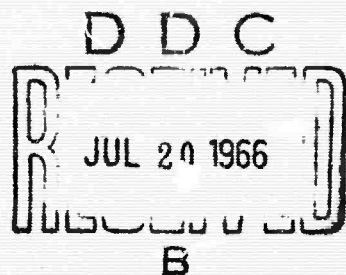
IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

U.S. ARMY ELECTRONICS LABORATORIES
FORT MONMOUTH, NEW JERSEY

CONTRACT DA-36-039-AMC-00040(E)
ORDER NO. 5384-PM-63-91



SPONSORED BY THE ADVANCED RESEARCH PROJECTS AGENCY
FOR THE
THAI-U.S. MILITARY RESEARCH AND DEVELOPMENT CENTER
SUPREME COMMAND HEADQUARTERS
BANGKOK, THAILAND



STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA

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June 1965

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SRI Project 4240

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CONTENTS

I	INTRODUCTION	1
II	TERMINOLOGY AND SYMBOLS	3
	A. Terminology	3
	B. Descriptive Letters	4
	C. Qualifying Letters	4
	D. Description of Standard Types of E_s	5
	E. Multiple Reflections from E_s	6
III	IONOSPHERIC DATA	7
	f_{min}	7
	$f_o F_2$	8
	$M(3000)F_2$	9
	$h' F_2$	10
	$h' F$	11
	$f_o F_1$	12
	$M(3000)F_1$	13
	$f_o E$	14
	$h' E$	15
	$f_b E_s$	16
	$f_o E_s$	17
	$h' F_s$	18
	Types of E_s	19
	Median Values	20

ILLUSTRATIONS

Fig. 1	Summary Graphs	21
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I INTRODUCTION

Ionospheric observations are being carried out at the Laboratory of the Military Research and Development Center at Bangkok, Thailand, a joint United States-Thailand organization. A Model C-2 vertical-incidence sounder supplied and operated by the United States Army Radio Propagation Agency has been installed there. Table I gives pertinent information about the site.

Table I
VERTICAL-INCIDENCE SOUNDER SITE
AT BANGKOK, THAILAND

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
13.73°N	100.57°E	2.5°N	169.83°E

Dip angle: 10°N

Distance from dip equator: 450 km

Equipment:

Instrument: Type C2 (automatic)

PRF: 60 pps

Frequency sweep time: 30 sec

Frequency sweep range: 1 to 25 Mc

Pulse duration: 50 μ sec

Peak pulse power: approximately 10 kw.

The cooperation and participation of staff members of the Thailand Ministry of Defense and the support of the United States Advanced Research

Projects Agency, the United States Army Electronics Laboratories, and the United States Army Radio Propagation Agency made it possible for the data presented in this report to be accumulated

II TERMINOLOGY AND SYMBOLS

The terminology and symbols used in this data report are in accordance with the conventions established by the World Wide Soundings Committee.¹

A. TERMINOLOGY

f_oF_2 f_oF_1 f_oE	The ordinary wave critical frequency for the F_2 and F_1 layers and the E region, respectively.
f_oE_s	The ordinary wave top frequency corresponding to the highest frequency at which a mainly continuous E_s trace is observed.
f_bE_s	The blanketing frequency of an E_s layer, i.e., the lowest ordinary wave frequency at which the E_s layer begins to become transparent. (This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.)
f_{min}	The frequency below which no echoes are observed.
$M(3000)F_2$	The maximum usable frequency factor for a path of 3000 km for transmission by the F_2 layer.
$h'F_2$	The minimum virtual height of the ordinary wave trace for the highest stable stratification in the F region.
$h'F$	The most significant F-region virtual height parameter, that for the lowest F-region stratification. (Thus $h'F$ is identical with the current $h'F_2$ when F-region stratification is absent, i.e., at night, and with current $h'F_1$ when F_1 stratification is present.)

¹W. R. Piggott and K. Rawer, URSI Handbook of Ionogram Interpretation and Reduction of the World Wide Sounding Committee (Elsevier Publishing Company, Amsterdam, London, New York, 1961).

B. DESCRIPTIVE LETTERS

Certain effects observed on ionograms may make it difficult or impossible to obtain accurate numerical values. The descriptive letters listed below, when used alone indicate, in general, the presence of a phenomenon that may have influenced the measurement. Qualifying letters (Sec. C) indicate the nature of the uncertainty.

- A A lower thin layer present, e.g., E_s
- B Absorption in the vicinity of f_{min}
- C Any non-ionospheric reason
- D The upper limit of the normal frequency range
- E The lower limit of the normal frequency range
- F Spread echoes present
- G Ionization density of the layer too small for measurement
- H Stratification present
- L No sufficiently definite cusp between layers of the trace
- M Ordinary and extraordinary components indistinguishable
- N Conditions such that the measurement cannot be interpreted
- O Measurement referring to the ordinary component
- R Attenuation in the vicinity of a critical frequency
- S Interference or atmospherics
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- V Forked trace
- W Echo lying outside the height range recorded
- X Measurement referring to the extraordinary component
- Y Intermittent trace
- Z Third magneto-ionic component present.

C. QUALIFYING LETTERS

- D Greater than. . .
- E Less than. . .

- I An interpolated value
- J Ordinary component characteristic deduced from the extraordinary component
- O Extraordinary component characteristic deduced from the ordinary component
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- U Uncertain numerical value
- Z Measurement deduced from the third magneto-ionic component.

D. DESCRIPTION OF STANDARD TYPES OF E_s

The eight standard types of E_s are identified by lower-case letters: f, l, c, h, q, r, a, and s. These letters suggest the corresponding names, flat, low, cusp, high, equatorial, retardation, auroral, and slant, respectively, but are not restrictive. The letter n is used to designate an E_s trace that does not correspond to one of the eight types. The classifications are:

- f An E_s trace showing no appreciable increase of height with frequency, usually relatively solid at most latitudes. (This classification may be used only at night; it appears that flat E_s traces observed in the daytime are classified according to their virtual height: h or l.)
- l A flat E_s trace at or below the normal E-region minimum virtual height in the day or below the E-region minimum virtual height at night.
- c An E_s trace showing a relatively symmetrical cusp at or below f_oE. (This is usually continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing—usually a daytime type.)
- h An E_s trace showing a discontinuity in height with the normal E-region trace at or above f_oE and an asymmetrical cusp. (The low-frequency end of the E_s trace lies clearly above the high-frequency end of the normal E trace—usually a daytime type.)
- q An E_s trace that is diffuse and nonblanketing over a wide frequency range, the spread being most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
- r An E_s trace that is nonblanketing over part or all of its frequency range, showing an increase in virtual height at the high-frequency

end similar to group retardation. (This is distinguished from the usual group retardation--as in the case of an occulting thick E region--by the lack of group retardation in the F traces at corresponding frequencies and the lack of complete blanketing.)

- a An E_s pattern having a well-defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. (These sometimes extend over several hundred kilometers of virtual height.)
- s A diffuse E_s trace that rises steadily with frequency, usually emerging from another type of E_s trace. (The rising trace alone is classified as s; the horizontal trace is classified separately. At high latitudes, the slant trace usually starts to rise from a horizontal E_s trace, such as l or f, at frequencies that greatly exceed the E-region critical frequency, e.g., about 6 Mc; whereas at low latitudes it usually rises from equatorial-type E_s , q, c, or h, at frequencies near the regular E critical frequency. Type s is never used to determine $f_o E$ unless echoes clearly identifiable as E_s echoes are seen.)
- n An E trace that cannot be classified as one of the standard types. (This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.)

E. MULTIPLE REFLECTIONS FROM E_s

When the ionogram shows the presence of multiple reflections from E_s the number of traces seen will be recorded with the letter indicating the type.

Characteristic: fmin

IONOSPHERIC
Sweep: 1 Mc to 25 Mc
February

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	023*	018	017	015	B	B	B	021	025	032	034	036
2	019	015	016	016	016	B	B	025	028	033	036	038
3	024	017	015	014	016	B	B	021	030	032	035	037
4	024	018	019	018	016	B	B	024	020	026	035	037
5	025	016	016	014	015	B	B	020	C	026	C	030
6	020	014	014	016	B	B	B	019	027	032	035	037
7	E017S	013	014	E	016	B	B	020	025	026	C	030
8	018	017	013	014	014	B	B	019	025	E026S	026	030
9	020	017	015	014	016	B	B	020	020	021	023	030
10	031	016	016	016	018	B	B	024	025	039	034	037
11	021	017	020	018	022	020	B	024	026	032	034	037
12	025	022	016	020	016	017	B	021	031	030	035	037
13	026	018	016	019	B	B	020	027	027	030	036	037
14	022	015	017	018	018	B	B	025	032	033	041	037
15	017	018	017	014	018	B	B	023	030	033	042	037
16	E017S	015	013	012	E015S	019	B	018	028	032	026	037
17	021	014	017	016	B	B	B	024	029	033	C	037
18	E017S	018	017	018	B	B	B	E025S	027	026	039	037
19	023	016	017	015	017	017	020	018	030	033	037	037
20	E016S	014	014	015	015	015	018	020	028	037	046	037
21	E017S	015	E	014	016	017	B	024	027	026	042	037
22	021	015	019	018	B	B	B	023	028	030	033	037
23	E017	014	014	E	015	014	018	018	028	030	C	037
24	C	C	C	C	C	C	C	C	C	C	C	037
25	C	C	C	C	C	C	C	C	C	C	C	037
26	C	C	C	C	C	C	C	C	C	C	C	037
27	C	C	C	C	C	C	C	C	C	C	C	037
28	C	C	C	C	C	C	C	C	C	C	C	037
29	-	-	-	-	-	-	-	-	-	-	-	037
30	-	-	-	-	-	-	-	-	-	-	-	037
31	-	-	-	-	-	-	-	-	-	-	-	037
Median	021	016	016	016	016	017	019	021	028	032	035	037
Count	23	23	22	21	17	7	4	23	22	23	19	17
UQ	024	018	017	018	018	019	020	024	029	030	039	037
LQ	017	015	014	014	015	015	018	020	025	026	034	037
NR	7	3	3	4	3	4	2	4	4	7	5	17

*Tabulation of 023 = 2.3 Mc.

PHERIC DATA
 25 Mc in 0.5 minute
 February 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
	052	048	050	044	050	030	031	020	034	025	001	024	028
	053	036	034	032	031	035	026	024	020	025	027	023	024
	037	040	040	048	035	037	028	025	027	027	026	030	024
	045	040	036	045	034	030	C	021	025	024	021	024	030
	037	046	050	050	037	034	029	003	019	020	E018S	025	019
	035	040	039	035	034	031	E025S	E017S	028	027	025	025	020
	031	031	031	029	024	024	028	023	025	019	028	034	B
	034	041	040	043	035	026	030	021	029	021	026	032	030
	034	030	030	030	034	035	028	E024S	019	021	021	025	020
	047	034	032	040	039	033	040	024	027	030	029	024	028
	036	036	035	051	046	035	032	024	028	031	032	023	025
	050	039	048	044	035	035	033	028	022	017	032	028	028
	037	036	035	034	032	029	025	021	028	035	025	024	021
	051	037	039	034	032	028	021	023	024	026	025	024	026
	046	040	040	032	030	023	020	E019S	018	020	019	018	017
	025	028	034	035	033	029	E025S	E025S	030	025	021	022	023
	C	055	051	051	050	033	E026S	021	020	020	017	018	017
	039	040	039	036	034	031	E025S	E023S	019	028	018	018	023
	039	039	040	033	028	025	021	025	021	021	019	019	021
	037	038	034	032	025	023	C	E020S	019	023	024	019	019
	056	040	040	036	032	026	023	025	017	017	017	020	019
	035	036	036	033	031	024	021	E026S	022	018	017	020	016
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	037	039	039	036	034	030	026	024	023	024	025	024	023
	21	22	22	22	22	22	20	22	22	22	22	22	21
	048	040	040	044	035	034	029	025	028	027	027	025	027
	035	036	034	033	031	026	024	021	019	020	019	020	019
	13	4	6	11	4	8	5	4	9	7	8	5	8

2⁷

Characteristic: foF2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	035*	028	024	017	B	B	B	043	060	068	073	077	0
2	048	J039S	025	024	021	B	B	040	061	071	073	063	0
3	055	0.1	042	035	B	B	B	038	057	070	073	070	0
4	041	041	037	035	A	B	B	041	061	075	080	072	0
5	029	024	031	028	021	019	B	040	062	071	C	066	0
6	046	0.1	J039S	026	B	B	B	042	068	J080S	090	076H	0
7	035	J034.1	040	025	B	B	B	043	064	083	078	076	0
8	025	025	A	019	J017R	B	B	046	075	088	092	086	0
9	J039S	033	034	032	019	B	B	047	065	066	068	068	0
10	F	F	F	F	F	B	B	046	061	070	079	R	0
11	042	034	031	029	027	024	B	043	062	071	083	079	0
12	040	037	033	032	0.1	F	B	041	J060S	069	078	081	0
13	036	036	031	025	B	B	A	041	063	075	084	088	0
14	052	050	044	036	026	021	B	040	060	068	081	096	0
15	050	051	055	044	021	B	B	040	062	070	075	073	0
16	A	065	J065S	F	024	A	B	044	069	068	061	063	0
17	059	045	027	B	B	B	B	043	J062S	R	C	067	0
18	J048S	047	034	018	B	B	B	J040S	054	051	056	057	0
19	052	054	047	038	024	A	A	043	057	070	084	071	0
20	043	038	031	025	A	A	A	043	056	071	075	069	0
21	042	036	036	035	021	;	B	043	059	R	R	059	0
22	054	U050S	050	022	B	B	B	J050S	J062S	076	075	071	0
23	A	A	F	029	A	A	A	049	069	076	C	C	0
24	C	C	C	C	C	C	C	C	C	C	C	C	0
25	C	C	C	C	C	C	C	C	C	C	C	C	0
26	C	C	C	C	C	C	C	C	C	C	C	C	0
27	C	C	C	C	C	C	C	C	C	C	C	C	0
28	C	C	C	C	C	C	C	C	C	C	C	C	0
29	-	-	-	-	-	-	-	-	-	-	-	-	0
30	-	-	-	-	-	-	-	-	-	-	-	-	0
31	-	-	-	-	-	-	-	-	-	-	-	-	0
Median	043	039	035	029	021	021	-	043	062	071	078	071	0
Count	20	21	20	20	11	3	-	23	23	21	19	21	0
UQ	051	050	043	035	026	023	-	046	064	075	083	079	0
LQ	038	034	031	025	021	020	-	040	060	069	073	067	0
QR	13	16	12	10	5	3	-	6	4	6	10	12	0

* Tabulation of 035 = 3.5 Mc.

OSPHERIC DATA
 to 25 Mc in 0.5 minute
 ebruary 1965

0	11	12	13	14	15	16	17	18	19	20	21	22	23
73	077	088	096	088	071	071	073	075	R	068	063	058	050
73	063	063	064	065	069	070	072	073	070	066	069	J064S	052
73	070	071	074	074	076	074	085	085	077	066	061	056	047
80	072	070	076	083	081	085	086	087	091	F	074	054	040
C	066	063	067	068	073	082	087	087	R	073	065	063	057
90	076H	072	074	070	081	080	090	078	087	076	066	047	036
78	076	078	072	078	082	082	084	093	094	065	061	041	B
92	086	084	085	088	092	097	094	D090S	D075R	077	068	060	046
68	068	A	062	J069R	076	085	D095S	D095S	077	070	063	F	047
79	R	074	069	072	078	083	086	087	R	077	064	052	045
83	079	A	064	062	065	068	073	083	073	065	F	F	054
78	081	082	074	069	072	070	074	075	072	066	063	056	042
84	088	083	R	A	U072S	073	075	074	081	070	069	063S	059
81	096	092	093	092	083	083	077	072	064	063	057	057	A
75	073	R	069	R	073	073	076	081	U075R	076F	F	F	F
61	063	066	073	082	086	083	085	088	085	079	R	R	064
C	067	065	067	071	075	083	085	081	084	J074S	F	F	F
56	057	055	064	068	067	073	081	078	071	F	F	F	F
84	071	R	069	068	069	072	081	080	078	U073S	J075S	052	048
75	069	070	068	075	079	083	088	084	085	R	070	057	J053S
R	059	057	A	A	A	U070S	068	068	069	065	060	059	055
75	071	069	069	067A	068	072	074	086	R	077	J073S	061	F
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	071	070	069	071	075	077	083	082	077	070	065	057	049
19	21	18	20	19	21	22	22	22	18	19	17	16	16
83	079	082	074	082	081	083	086	087	095	076	069	060	054
73	067	065	067	068	070	072	074	075	072	066	062	053	046
10	12	17	7	14	11	11	12	12	13	10	7	7	8

Characteristic: M(3000)F2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5
February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	360 ⁺	360	340	360	B	B	B	330	340	340	345	335	330
2	345	S	340	295	355	B	B	330	305	290	275	280	280
3	340	360	350	390	B	B	B	325	320	270	260	275	280
4	325	325	345	360	A	B	B	340	315	310	290	260	280
5	320	290	310	335	320	345	B	310	300	240	C	295	280
6	335	340	S	355	B	B	B	335	330	S	390	290H	280
7	355	S	320	340	B	B	B	325	300	310	260	290	280
8	325	330	A	310	R	B	B	305	310	285	275	280	280
9	S	330	330	365	385	B	B	285	340	275	235	265	280
10	F	F	F	F	F	B	B	350	350	330	330	R	280
11	335	340	330	330	330	310	B	335	335	305	280	240	280
12	340	340	340	340	320	F	B	340	S	345	330	310	280
13	345	270	375	350	B	B	A	335	320	305	310	305	280
14	345	350	355	350	355	320	B	325	325	305	310	325	280
15	335	315	340	365	360	B	B	330	295	270	270	270	280
16	A	335	S	F	350	A	B	335	290	260	255	270	280
17	335	380	370	B	B	B	B	340	S	R	C	255	280
18	S	355	380	345	B	B	B	S	295	275	270	270	280
19	330	355	335	360	350	A	A	355	340	325	305	270	280
20	350	360	360	350	A	A	A	350	370	290	275	295	280
21	310	290	295	380	355	B	B	340	335	R	R	285	280
22	340	U370S	380	355	B	B	B	S	S	310	275	270	280
23	A	A	F	360	A	A	A	335	325	290	C	C	280
24	C	C	C	C	C	C	C	C	C	C	C	C	280
25	C	C	C	C	C	C	C	C	C	C	C	C	280
26	C	C	C	C	C	C	C	C	C	C	C	C	280
27	C	C	C	C	C	C	C	C	C	C	C	C	280
28	C	C	C	C	C	C	C	C	C	C	C	C	280
29	-	-	-	-	-	-	-	-	-	-	-	-	280
30	-	-	-	-	-	-	-	-	-	-	-	-	280
31	-	-	-	-	-	-	-	-	-	-	-	-	280
Median	338	340	340	353	353	320	-	335	323	298	275	280	280
Count	18	19	18	20	10	3	-	21	20	20	19	21	280
UQ	345	360	360	360	360	333	-	340	337	310	310	295	280
LQ	330	325	330	340	330	315	-	325	303	275	270	270	280
QR	15	35	30	20	30	18	-	15	34	35	40	25	280

* Tabulation of 360 = factor of 3.6

IONOSPHERIC DATA
to 25 Mc in 0.5 minute
February 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
345	335	330	320	275	265	290	295	290	R	305	315	335	325
275	280	260	270	280	265	240	295	320	305	320	310	S	335
260	275	260	265	275	280	295	310	330	340	330	330	315	325
290	260	260	275	300	305	300	300	320	305	F	365	350	345
C	295	250	270	270	275	310	305	295	R	300	300	300	320
390	290H	270	275	290	295	310	320	315	315	340	350	350	345
260	290	290	255	275	305	310	320	330	350	335	325	335	B
275	280	270	270	265	275	290	305	S	R	320	310	320	320
235	265	A	245	R	275	295	S	S	310	300	310	F	330
330	R	250	255	270	270	275	300	310	R	300	330	330	315
280	240	A	235	245	260	270	275	305	315	295	F	F	340
330	310	275	250	265	260	265	275	300	335	330	345	345	350
310	305	245	R	A	U260S	265	285	290	305	320	310	S	340
310	325	315	290	255	265	275	280	240	260	300	320	330	A
270	270	R	245	R	275	270	285	280	U305R	F	F	F	F
255	270	260	265	290	315	310	310	310	315	310	R	R	340
C	255	265	270	275	285	310	300	290	280	S	F	F	F
270	270	260	255	275	255	275	305	305	300	F	F	F	F
305	270	R	250	245	280	300	325	335	330	U350S	S	350	350
275	295	265	260	260	290	300	300	310	325	R	330	320	S
R	285	270	A	A	A	U245S	255	275	295	305	310	310	330
275	270	260	250	A	265	275	290	305	R	315	S	330	F
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
275	280	262	263	275	275	290	300	305	310	315	320	330	335
19	21	18	20	17	21	22	21	20	17	17	15	14	15
310	295	270	270	277	287	300	307	317	327	330	330	345	345
270	270	260	250	263	265	270	285	290	303	300	310	320	325
40	25	10	20	14	22	30	22	27	24	30	20	25	20

Characteristic: h'F₂

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	-	-	-	-	-	-	-	L	L	290*	282	285	300
2	-	-	-	-	-	-	-	L	L	350	340	360	E40
3	-	-	-	-	-	-	-	L	L	330	350	340	300
4	-	-	-	-	-	-	-	L	L	315	330	350	300
5	-	-	-	-	-	-	-	L	L	320	C	336	300
6	-	-	-	-	-	-	-	L	L	300	300	310H	300
7	-	-	-	-	-	-	-	L	L	305	350	340	300
8	-	-	-	-	-	-	-	L	L	L	315	L	300
9	-	-	-	-	-	-	-	L	270	L	388	335	300
10	-	-	-	-	-	-	-	L	L	390	L	L	300
11	-	-	-	-	-	-	-	L	L	L	340	360	300
12	-	-	-	-	-	-	-	L	270	283	310	320	300
13	-	-	-	-	-	-	-	L	L	L	405	312	300
14	-	-	-	-	-	-	-	L	L	L	319	295	300
15	-	-	-	-	-	-	-	L	L	L	230	350	300
16	-	-	-	-	-	-	-	L	L	L	390	370	300
17	-	-	-	-	-	-	-	L	L	L	-	380	400
18	-	-	-	-	-	-	-	L	L	385	400	400	400
19	-	-	-	-	-	-	-	L	L	310	328	330	300
20	-	-	-	-	-	-	-	L	L	340	350	340	E40
21	-	-	-	-	-	-	-	L	L	336	390	E400B	E40
22	-	-	-	-	-	-	-	L	L	320	350	E405A	E40
23	-	-	-	-	-	-	-	L	L	310	C	C	300
24	-	-	-	-	-	-	-	C	C	C	C	C	300
25	-	-	-	-	-	-	-	C	C	C	C	C	300
26	-	-	-	-	-	-	-	C	C	C	C	C	300
27	-	-	-	-	-	-	-	C	C	C	C	C	300
28	-	-	-	-	-	-	-	C	C	C	C	C	300
29	-	-	-	-	-	-	-	-	-	-	-	-	300
30	-	-	-	-	-	-	-	-	-	-	-	-	300
31	-	-	-	-	-	-	-	-	-	-	-	-	300
Median	-	-	-	-	-	-	-	-	-	320	340	340	300
Count	-	-	-	-	-	-	-	-	2	15	19	20	300
UQ	-	-	-	-	-	-	-	-	-	340	388	365	300
LQ	-	-	-	-	-	-	-	-	-	305	315	325	300
QR	-	-	-	-	-	-	-	-	-	35	73	40	300

*Tabulation of 290 = 290 km.

OSPHERIC DATA
to 25 Mc in 0.5 minute
February 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
282	285	300	320	340	350	L	L	-	-	-	-	-	-
340	360	E400A	400	400A	L	360	L	-	-	-	-	-	-
350	340	385	360	355	346	325	L	-	-	-	-	-	-
330	350	380	350	320	310	310	L	-	-	-	-	-	-
C	336	L	370	375	340	310	L	L	-	-	-	-	-
300	310H	360	350	340	305	300	255	-	-	-	-	-	-
350	340	350	L	320	290	305	280	-	-	-	-	-	-
315	L	L	365	L	350	310	288	-	-	-	-	-	-
388	335	A	E450A	L	330	320	285	-	-	-	-	-	-
L	L	375	U372L	360	350	L	L	-	-	-	-	-	-
340	360	A	E435A	L	L	350	L	-	-	-	-	-	-
310	320	370	380	375	370	L	L	-	-	-	-	-	-
405	312	340	E375A	A	-	320H	E330A	-	-	-	-	-	-
319	295	329	360	360	330	308	L	L	-	-	-	-	-
230	350	380	370	E37C	340	E375A	L	L	-	-	-	-	-
390	370	380	350	326	290	300	L	-	-	-	-	-	-
-	380	400	350	350	340	300	L	-	-	-	-	-	-
400	400	440	405	350	L	348	L	L	-	-	-	-	-
328	330	390	375	400	340	310	270	-	-	-	-	-	-
350	340	E400A	E400A	370	330	310	L	-	-	-	-	-	-
390	E400B	E400A	A	A	A	E340A	E340A	E300A	-	-	-	-	-
350	E405A	E420A	E480A	E470A	360	L	L	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
340	340	380	371	360	340	310	285	-	-	-	-	-	-
19	20	18	20	17	17	18	7	1	-	-	-	-	-
388	365	400	400	375	350	348	330	-	-	-	-	-	-
315	325	360	355	340	320	308	270	-	-	-	-	-	-
73	40	40	45	35	30	40	60	-	-	-	-	-	-

Characteristic: h'F

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 m

February 1965

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	E240B	230*	E230B	E230B	B	B	B	250	235	230	225	220	E220
2	235	E210B	E240B	330	E250A	B	B	E255B	E230B	230	E235A	E230B	A
3	E230B	E220B	E220B	E210B	B	B	B	E250B	E230B	220	222	E225B	E200
4	E260B	E240B	250	340	A	B	B	E240B	230	E213A	205	200	190
5	290	E30A	E260A	250	E250B	E250B	B	250	E228B	E200A	C	E190B	E180
6	E240B	E230S	E240B	215	B	B	B	E250B	E220B	220	210	190	200
7	230	E240B	250	240	B	B	B	250	240	E225A	210	E200A	A
8	E270S	270	A	E317A	A	B	B	250	E230A	E220A	205	200	E200
9	E250B	250	260	229	E218S	B	B	E230A	230	E215A	E253A	A	A
10	U290F	270	250	245	230	B	B	240	220	E210A	E210A	E200A	E205
11	248	250	E260B	E268B	E270B	E310B	B	E260S	E230A	E230A	E245A	E236A	A
12	E250B	245	250	E260B	E280B	U280F	B	E258S	E240B	229	210	E220A	E200
13	240	E235A	E220A	E250B	B	B	A	E260B	E230B	E213B	220	E225A	A
14	E220A	E250A	230	E230A	E250B	E300B	B	E250S	E250B	220	220	E213A	217
15	230	E240B	230	220	E220B	B	B	245	240	220	218	210	210
16	A	240	220	210	E230A	A	B	250	224	E220B	210	210	E235
17	230	210	230	B	B	B	B	E250B	240	220	C	E210B	B
18	250	220	220	215	B	B	B	E260S	230	225	E240B	200	180
19	E260A	220	218	208	235	A	A	250	E240B	220	220	210	200
20	230	230	210	240	A	A	A	240	230	220	210	228	A
21	E270S	E285B	260	208	E250B	B	B	250	E240B	230	E218B	B	A
22	250	U230S	230	E260B	B	B	B	250	E240A	E270A	A	A	A
23	A	A	238	E250A	A	A	A	250	E240A	210	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C
29	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	248	240	234	240	250	290	-	250	230	220	218	210	200
Count	21	22	22	22	11	4	-	23	23	23	18	19	13
UQ	260	250	250	260	250	305	-	250	240	229	225	225	213
LQ	230	230	230	215	230	270	-	250	230	215	210	200	195
QR	30	20	20	45	20	35	-	0	10	14	15	25	18

* Tabulation of 230 = 230 km.

SPHERIC DATA
 o 25 Mc in 0.5 minute
 bbruary 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
5	220	E220A	B	E210A	180	215	E240B	255	260	225	E260B	E250B	240
5A	E230B	A	A	A	230	E220A	E260A	260	250	E270B	E265B	E239A	E248A
2	E225B	E200B	E200B	185	E183A	222	E240B	250	E230B	E230B	E240B	E260B	E280B
5	200	190	A	E238A	A	A	E270A	260	260	U240F	220	220	E229B
	E190B	E180B	E200B	170H	E200B	E220B	E220B	E220S	E270A	240	E240A	240	E230B
0	190	200	E190B	E190B	180	E220A	E220A	E245A	288	E240B	225	E216B	E230S
0	E200A	A	E200A	188	176	235	E260A	250	E240A	E225A	E270A	E240A	B
5	200	E200B	E200B	E200B	E200B	E200A	240	E250B	E240B	E225A	E240B	E250B	E240B
3A	A	A	A	E243A	E215B	210	E240S	240	E255A	E280A	E260A	U255F	E268A
0A	E200A	E205A	E350A	E210B	207	230	E215B	E260B	250	230	220	236	E260B
5A	E236A	A	A	E240B	E223B	225	E250B	E255S	E268B	E300B	U260F	U240F	E240B
0	E220A	E200A	E200B	188	170H	220	E260B	E245S	E260A	E218A	E220A	E212A	E233B
0	E225A	A	A	A	A	E260A	A	300	E360B	E250B	E270A	E278A	E240A
0	E213A	217	E250A	220H	A	E260A	E260A	260H	E300B	260	250	E235A	A
8	210	210	A	A	E220A	A	230	E250A	260	U260F	U275F	U250F	U240F
0	210	E235A	A	E350A	223	E200A	E230A	250	E260B	E270B	U265F	E260A	240
	E210B	B	A	E200B	E330B	E220B	220	250	260	250	240	U240F	U230F
OB	200	180	180	170	170H	210	E240S	E240A	270	U260F	U300F	U300F	U300F
0	210	200	E200B	E183A	180H	E230A	E220A	240	255	E230A	210	210	260
0	228	A	A	E240A	E170A	E200A	E230A	240	250	250	220	230	240
B	B	A	A	A	A	A	A	A	270	250	260	E340A	245
	A	A	A	A	E280A	220	E230A	240	200	240	230	230	U220F
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
8	210	200	200	200	200	220	240	250	260	245	245	240	240
9	19	13	10	17	18	19	20	21	22	22	22	22	20
5	225	213	200	239	223	230	255	260	270	260	265	255	254
0	200	195	200	187	178	210	225	243	250	230	225	230	232
5	25	18	0	52	45	20	30	17	20	30	40	25	22

2

Characteristic: foF1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5
February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	-	-	-	-	-	-	-	L	L	L	043*	044	UO
2	-	-	-	-	-	-	-	L	L	042	043	UO44R	
3	-	-	-	-	-	-	-	L	L	043	UO43R	044	O
4	-	-	-	-	-	-	-	L	L	043	043	043	O
5	-	-	-	-	-	-	-	L	L	042	C	044	O
6	-	-	-	-	-	-	-	L	L	042	043	044	O
7	-	-	-	-	-	-	-	L	L	042	043	045	
8	-	-	-	-	-	-	-	L	L	L	045	044	DO
9	-	-	-	-	-	-	-	L	L	L	043	A	
10	-	-	-	-	-	-	-	L	L	L	044	044	O
11	-	-	-	-	-	-	-	L	L	L	044	044	
12	-	-	-	-	-	-	-	L	L	L	043	045	O
13	-	-	-	-	-	-	-	L	L	L	044	044	
14	-	-	-	-	-	-	-	L	L	UO42L	043	043	O
15	-	-	-	-	-	-	-	L	L	L	UO42L	044	O
16	-	-	-	-	-	-	-	L	L	UO40L	043	043	O
17	-	-	-	-	-	-	-	L	L	042	C	043	
18	-	-	-	-	-	-	-	L	L	041	UO42R	042	O
19	-	-	-	-	-	-	-	L	L	042	042	044	O
20	-	-	-	-	-	-	-	L	L	041	042	UO44R	
21	-	-	-	-	-	-	-	L	L	041	042	B	
22	-	-	-	-	-	-	-	L	L	L	A	A	
23	-	-	-	-	-	-	-	L	L	041	C	C	
24	-	-	-	-	-	-	-	C	C	C	C	C	
25	-	-	-	-	-	-	-	C	C	C	C	C	
26	-	-	-	-	-	-	-	C	C	C	C	C	
27	-	-	-	-	-	-	-	C	C	C	C	C	
28	-	-	-	-	-	-	-	C	C	C	C	C	
29	-	-	-	-	-	-	-	-	-	-	-	-	
30	-	-	-	-	-	-	-	-	-	-	-	-	
31	-	-	-	-	-	-	-	-	-	-	-	-	
Median	-	-	-	-	-	-	-	-	-	042	043	044	O
Count	-	-	-	-	-	-	-	-	-	14	19	19	
UQ	-	-	-	-	-	-	-	-	-	042	043	044	
LQ	-	-	-	-	-	-	-	-	-	041	042	043	
QR	-	-	-	-	-	-	-	-	-	1	1	1	

* Tabulation of 043 = 4.3 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
February 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
43*	044	U044R	B	U042R	L	L	L	-	-	-	-	-	-
43	U044R	A	A	A	044	U042L	L	-	-	-	-	-	-
43R	044	045	R	044	043	U042L	L	-	-	-	-	-	-
43	043	046	A	044	A	A	L	-	-	-	-	-	-
C	044	044	UC-14R	046H	044	L	L	L	-	-	-	-	-
43	044	045	042	045H	042	L	L	L	-	-	-	-	-
43	045	A	045	044	L	L	L	-	-	-	-	-	-
45	044	DO41R	046	046	L	L	L	-	-	-	-	-	-
43	A	A	A	044	042	L	L	-	-	-	-	-	-
44	044	044	L	044	U045L	U041L	L	-	-	-	-	-	-
44	044	A	A	044	043	042	L	-	-	-	-	-	-
43	045	044	044	043	043	040	L	-	-	-	-	-	-
44	044	A	A	A	A	042	A	-	-	-	-	-	-
43	043	044	044	044	A	L	L	L	-	-	-	-	-
42L	044	043	A	A	U042L	A	L	L	-	-	-	-	-
43	043	044	A	U43A	043	L	L	-	-	-	-	-	-
C	043	B	B	U042R	041B	U040L	L	-	-	-	-	-	-
42R	042	044	043	041	U044L	L	L	L	-	-	-	-	-
42	044	044	043	042	041H	041	L	-	-	-	-	-	-
42	U044R	A	A	043	042	L	L	-	-	-	-	-	-
42	B	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	042A	L	L	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	044	044	044	044	043	042	-	-	-	-	-	-	-
19	19	13	8	17	15	8	-	-	-	-	-	-	-
43	044	044	044	044	044	042	-	-	-	-	-	-	-
42	043	044	043	043	042	041	-	-	-	-	-	-	-
1	1	0	1	1	2	1	-	-	-	-	-	-	-

Characteristic: M(3000)F1

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

February 1

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	L	380*	390
2	-	-	-	-	-	-	-	L	L	365	390	U400
3	-	-	-	-	-	-	-	L	L	380	U410R	390
4	-	-	-	-	-	-	-	L	L	370	395	420
5	-	-	-	-	-	-	-	L	L	370	C	420
6	-	-	-	-	-	-	-	L	L	370	320	410
7	-	-	-	-	-	-	-	L	L	380	400	390
8	-	-	-	-	-	-	-	L	L	L	375	390
9	-	-	-	-	-	-	-	L	L	L	395	A
10	-	-	-	-	-	-	-	L	L	L	375	380
11	-	-	-	-	-	-	-	L	L	L	330	395
12	-	-	-	-	-	-	-	L	L	L	375	370
13	-	-	-	-	-	-	-	L	L	L	380	395
14	-	-	-	-	-	-	-	L	L	U380L	375	390
15	-	-	-	-	-	-	-	L	L	L	U370L	380
16	-	-	-	-	-	-	-	L	L	U380L	390	410
17	-	-	-	-	-	-	-	L	L	365	C	395
18	-	-	-	-	-	-	-	L	L	370	U390R	420
19	-	-	-	-	-	-	-	L	L	380	390	400
20	-	-	-	-	-	-	-	L	L	370	390	U395
21	-	-	-	-	-	-	-	L	L	370	390	B
22	-	-	-	-	-	-	-	L	L	L	A	A
23	-	-	-	-	-	-	-	L	L	370	C	C
24	-	-	-	-	-	-	-	C	C	C	C	C
25	-	-	-	-	-	-	-	C	C	C	C	C
26	-	-	-	-	-	-	-	C	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	370	390	395
Count	-	-	-	-	-	-	-	-	-	14	19	18
UQ	-	-	-	-	-	-	-	-	-	380	390	410
LQ	-	-	-	-	-	-	-	-	-	370	375	390
QR	-	-	-	-	-	-	-	-	-	10	15	20

* Tabulation of 380 = factor of 3.8.

PHERIC DATA
 25 Mc in 0.5 minute
 February 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
* R	390 U40GR	U405R A	B A	U410R A	L 350	L U360L	L L	- -	- -	- -	- -	- -	- -
	390	400	R	410	380	U365L	L	-	-	-	-	-	-
	420	410	A	390	A	A	L	-	-	-	-	-	-
	420	410	U305R	370L	380	L	L	L	-	-	-	-	-
	410	420	430	J85H	390	L	L	-	-	-	-	-	-
	390	A	400	380	L	L	L	-	-	-	-	-	-
	390	R	365	375	L	L	L	-	-	-	-	-	-
	A	A	A	360	375	L	L	-	-	-	-	-	-
	380	410	L	390	U345L	U370L	L	-	-	-	-	-	-
	395	A	A	375	365	350	L	-	-	-	-	-	-
	370	400	405	410	370	380	L	-	-	-	-	-	-
	395	A	A	A	A	360	A	-	-	-	-	-	-
	390	400	380	395	A	L	L	L	-	-	-	-	-
	380	410	A	A	U360L	A	L	L	-	-	-	-	-
	410	390	A	A	370	L	L	-	-	-	-	-	-
	395	B	B	U430R	B	U370L	L	-	-	-	-	-	-
	430	430	430	395	U370L	L	L	L	-	-	-	-	-
	400	380	435	420	385H	365	L	-	-	-	-	-	-
	U395R	A	A	390	375	L	L	-	-	-	-	-	-
	B	A	A	A	A	A	A	A	-	-	-	-	-
	A	A	A	A	A	L	L	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	395 19	408 12	402 8	390 16	370 13	365 8	- -	- -	- -	- -	- -	- -	- -
	410 390 20	410 400 10	430 388 42	410 378 32	380 363 17	370 360 10	- - -	- - -	- - -	- - -	- - -	- - -	- - -

2

Characteristic: foE

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

February 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	-	-	-	-	-	-	-	B	280*	B	B	B	1
2	-	-	-	-	-	-	-	B	B	B	R	B	1
3	-	-	-	-	-	-	-	B	B	340	U37OR	B	1
4	-	-	-	-	-	-	-	B	U27OR	A	B	B	1
5	-	-	-	-	-	-	-	B	B	B	C	B	1
6	-	-	-	-	-	-	-	B	B	B	R	B	1
7	-	-	-	-	-	-	-	B	A	A	B	A	1
8	-	-	-	-	-	-	-	B	A	A	A	B	1
9	-	-	-	-	-	-	-	A	A	A	A	B	1
10	-	-	-	-	-	-	-	B	A	B	B	B	1
11	-	-	-	-	-	-	-	B	B	B	B	B	1
12	-	-	-	-	-	-	-	B	B	R	R	R	1
13	-	-	-	-	-	-	-	B	R	B	B	B	1
14	-	-	-	-	-	-	-	B	B	U30OR	B	B	1
15	-	-	-	-	-	-	-	B	B	B	B	B	1
16	-	-	-	-	-	-	-	B	B	B	R	A	1
17	-	-	-	-	-	-	-	B	B	B	C	B	1
18	-	-	-	-	-	-	-	S	B	R	B	B	1
19	-	-	-	-	-	-	-	B	B	B	B	B	1
20	-	-	-	-	-	-	-	B	B	R	R	B	1
21	-	-	-	-	-	-	-	B	B	B	B	B	1
22	-	-	-	-	-	-	-	B	B	B	B	B	1
23	-	-	-	-	-	-	-	A	B	B	C	C	1
24	-	-	-	-	-	-	-	C	C	C	C	C	1
25	-	-	-	-	-	-	-	C	C	C	C	C	1
26	-	-	-	-	-	-	-	C	C	C	C	C	1
27	-	-	-	-	-	-	-	C	C	C	C	C	1
28	-	-	-	-	-	-	-	C	C	C	C	C	1
29	-	-	-	-	-	-	-	-	-	-	-	-	1
30	-	-	-	-	-	-	-	-	-	-	-	-	1
31	-	-	-	-	-	-	-	-	-	-	-	-	1
Median Count	-	-	-	-	-	-	-	-	2	2	1	-	
UQ	-	-	-	-	-	-	-	-	-	-	-	-	
LQ	-	-	-	-	-	-	-	-	-	-	-	-	
QR	-	-	-	-	-	-	-	-	-	-	-	-	

* Tabulation of 280 = 2.8 Mc.

February 1965

2

Characteristic: h'E

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5
February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	-	-	-	-	-	-	-	B	150*	B	B	B	B
2	-	-	-	-	-	-	-	B	B	B	120	B	B
3	-	-	-	-	-	-	-	B	B	170	165	B	B
4	-	-	-	-	-	-	-	B	118	A	B	B	B
5	-	-	-	-	-	-	-	B	B	B	C	B	B
6	-	-	-	-	-	-	-	B	B	B	115	B	B
7	-	-	-	-	-	-	-	B	A	A	B	A	A
8	-	-	-	-	-	-	-	B	A	A	A	B	B
9	-	-	-	-	-	-	-	A	A	A	A	B	A
10	-	-	-	-	-	-	-	B	A	B	B	B	A
11	-	-	-	-	-	-	-	B	B	B	B	B	B
12	-	-	-	-	-	-	-	B	B	120	122	120	B
13	-	-	-	-	-	-	-	B	120	B	B	B	12
14	-	-	-	-	-	-	-	B	B	122	B	B	B
15	-	-	-	-	-	-	-	B	B	B	B	B	B
16	-	-	-	-	-	-	-	B	B	B	110	A	A
17	-	-	-	-	-	-	-	B	B	B	C	B	B
18	-	-	-	-	-	-	-	S	B	120	B	B	B
19	-	-	-	-	-	-	-	B	B	B	B	B	B
20	-	-	-	-	-	-	-	B	B	118	120	B	B
21	-	-	-	-	-	-	-	B	B	B	B	B	B
22	-	-	-	-	-	-	-	B	B	B	B	B	B
23	-	-	-	-	-	-	-	A	B	B	C	C	C
24	-	-	-	-	-	-	-	C	C	C	C	C	C
25	-	-	-	-	-	-	-	C	C	C	C	C	C
26	-	-	-	-	-	-	-	C	C	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C	C
29	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median Count	-	-	-	-	-	-	-	-	120 3	120 5	120 6	- 1	- 1
UQ	-	-	-	-	-	-	-	-	135	146	122	-	-
LQ	-	-	-	-	-	-	-	-	119	119	115	-	-
QR	-	-	-	-	-	-	-	-	16	27	7	-	-

* Tabulation of 150 = 150 km.

OSPHERIC DATA
to 25 Mc in 0.5 minute
February 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
B	B	B	B	B	B	B	B	-	-	-	-	-	-
20	B	B	B	A	A	B	125	-	-	-	-	-	-
65	B	B	B	B	B	B	B	-	-	-	-	-	-
B	B	B	A	B	B	B	B	-	-	-	-	-	-
C	B	B	B	B	B	B	B	B	-	-	-	-	-
15	B	B	B	B	A	B	A	-	-	-	-	-	-
B	A	A	A	A	A	A	B	-	-	-	-	-	-
A	B	B	B	B	B	B	B	-	-	-	-	-	-
A	B	A	A	A	B	B	B	-	-	-	-	-	-
B	B	A	B	B	B	B	B	-	-	-	-	-	-
B	B	B	B	B	B	B	B	-	-	-	-	-	-
22	120	B	B	B	B	B	B	-	-	-	-	-	-
B	B	120	B	B	A	A	A	-	-	-	-	-	-
B	B	B	B	115	B	A	A	A	-	-	-	-	-
B	B	B	B	A	A	A	A	A	-	-	-	-	-
10	A	A	B	B	118	115	S	-	-	-	-	-	-
C	B	B	B	B	B	B	A	-	-	-	-	-	-
E	B	B	B	B	B	B	S	A	-	-	-	-	-
B	B	B	B	B	118	120	A	-	-	-	-	-	-
20	B	B	B	B	A	A	A	-	-	-	-	-	-
B	B	B	B	B	B	B	A	A	-	-	-	-	-
B	B	B	B	B	B	120	A	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1	1	-	1	2	3	1	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-

Characteristic: fbEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5
February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	B	B	B	B	B	B	B	G	G	G	035*	G	B
2	B	B	B	B	018	B	B	B	B	G	039	B	M
3	B	B	B	B	B	B	B	B	B	G	G	B	B
4	B	B	B	021M	A	B	B	B	G	033M	G	G	G
5	B	M	018M	B	B	B	B	G	C	032M	C	B	B
6	B	B	B	B	B	B	B	B	B	G	G	G	C
7	S	B	B	E	B	B	B	B	029M	035M	C	035	04
8	B	B	A	016M	017M	B	F	B	028M	033M	033	035	B
9	B	B	B	B	B	B	B	026M	026M	035	040	044M	A
10	B	B	B	B	B	B	B	B	029	B	036	B	D04
11	B	B	B	B	B	B	B	B	029	034	040	D040R	A
12	B	B	B	B	B	B	B	B	B	G	G	G	B
13	B	022	M	B	B	B	A	B	B	B	G	D039R	D04
14	033M	034M	M	021M	B	B	B	B	B	G	G	B	G
15	020M	B	B	B	B	B	B	B	G	B	G	G	G
16	A	029M	014M	016M	016	A	B	B	G	B	G	040	04
17	B	B	B	B	B	B	B	B	B	B	C	C	E
18	M	B	B	B	B	B	B	S	B	G	B	B	E
19	026	B	B	B	-	A	A	023	B	B	G	G	G
20	-	M	B	B	A	A	A	B	G	B	B	D038S	05
21	S	B	E	B	B	B	B	B	B	033	B	B	05
22	M	021M	M	B	B	B	B	B	031	038	047M	060	06
23	A	A	024M	021M	A	A	A	028M	030	B	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C
29	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median Count	026 3	026 4	018 3	021 5	017 3	- -	- -	026 3	029 7	034 8	039 7	040 8	04 7
UQ	030	032	021	021	018	-	-	027	030	035	040	042	05
LQ	023	022	016	016	017	-	-	025	028	033	035	037	04
QR	7	10	5	5	1	-	-	2	2	2	5	5	1

* Tabulation of 035 = 3.5 Mc.

SPHERIC DATA

o 25 Mc in 0.5 minute

bruary 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
35*	G	B	B	B	B	G	B	B	B	B	B	B	B
39	B	M	047	050	037	B	032	033	022M	B	B	029	027M
G	B	B	B	G	D037R	G	B	B	B	B	B	B	B
G	G	G	048	B	049	044M	C	B	B	B	-	040M	B
C	B	B	B	G	B	B	B	B	041	028	028	B	B
G	G	G	B	B	035	032	027M	030M	M	B	M	B	B
C	035	046	040	036M	034M	034M	032	032	045M	028M	M	B	B
33	035	B	E	B	B	D027R	G	B	B	026M	B	B	B
40	044M	A	053	042M	B	G	B	B	029	029	M	B	032M
36	B	D041R	050	B	G	G	B	B	B	B	B	B	B
40	D040R	A	050M	B	B	G	B	B	B	B	B	B	B
G	G	B	B	G	B	B	B	B	-	B	B	B	B
G	D039R	D040R	054	A	053M	039M	055M	042M	B	B	043M	033	023
G	B	G	D041R	014	050	041	033M	028M	R	B	033	030M	A
G	G	G	D042R	054	035M	060	028M	026M	025M	025M	034M	021M	019
G	040	040M	049	046	D035R	031	030M	B	B	F	032M	031M	B
C	C	B	B	B	B	P	M	B	B	B	020M	025M	026M
B	B	B	B	B	G	G	S	025M	023	B	021	028M	B
G	G	G	B	038	B	034	029	B	B	023	B	022	039M
B	D038S	056	050	D042R	033	029	C	M	021M	026	D026R	020	B
B	B	051	A	A	A	055	045M	050M	029M	021M	027M	055	021M
47M	060	064	062	065	040	032	028	B	B	B	B	M	021
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
039	040	046	050	044	037	034	031	031	027	026	028	029	024
7	8	7	12	9	11	12	10	8	8	8	9	11	8
040	042	056	052	052	049	043	033	038	035	028	034	033	029
035	037	040	045	040	035	032	028	027	023	024	024	022	021
5	5	16	7	12	14	11	5	11	12	4	10	11	8

2

Characteristic: f_oF₂

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	B	B	B	B	B	B	B	G	G	G	035*	G	
2	B	B	B	B	021	B	B	B	B	G	039	B	04
3	B	B	B	B	B	B	B	B	B	G	G	B	1
4	B	B	B	023M	024	B	B	B	G	035M	G	G	
5	B	045M	034M	B	B	B	B	G	C	037M	C	B	1
6	B	B	B	B	B	B	B	B	B	G	G	G	
7	S	B	B	E	B	B	B	B	035M	043M	C	035	04
8	B	B	035M	021M	022M	B	B	B	030M	035M	043M	042	035
9	B	B	B	B	B	B	B	030M	035M	037	042	049M	04
10	B	B	B	B	B	B	B	B	035	B	036	B	DO
11	B	B	B	B	B	B	B	B	029	034	040	DO4CR	14
12	B	B	B	B	B	B	B	B	B	G	G	G	
13	B	027	019M	B	B	B	038M	B	B	B	G	DO39R	DO
14	039M	045M	029M	025M	B	B	B	B	B	G	G	B	
15	030M	B	B	B	B	B	B	B	G	B	G	G	
16	037M	035M	022M	020M	020	022M	B	B	B	B	G	045	04
17	B	B	B	B	B	B	B	B	B	B	C	C	1
18	025M	B	B	B	B	B	B	S	B	G	B	B	1
19	029	B	B	B	021	024M	031M	025	B	B	G	G	
20	035	025M	B	B	021	050M	029	B	G	B	B	DO38S	04
21	S	B	E	B	B	B	B	B	B	033	B	B	04
22	065M	050M	035M	B	B	B	B	B	031	038	050M	067	04
23	037M	045M	035M	032M	040M	038M	036M	043M	031	B	C	C	
24	C	C	C	C	C	C	C	C	C	C	C	C	
25	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	C	C	C	C	C	C	C	C	C	C	
27	C	C	C	C	C	C	C	C	C	C	C	C	
28	C	C	C	C	C	C	C	C	C	C	C	C	
29	-	-	-	-	-	-	-	-	-	-	-	-	
30	-	-	-	-	-	-	-	-	-	-	-	-	
31	-	-	-	-	-	-	-	-	-	-	-	-	
Median	036	045	034	023	021	031	033	030	031	037	040	040	04
Count	8	7	7	5	7	4	4	3	7	8	7	8	
UQ	038	045	035	028	024	044	037	036	035	041	042	047	04
LQ	030	027	022	021	021	023	030	028	031	035	036	037	04
QR	8	18	13	7	3	21	7	8	4	6	6	10	

* Tabulation of 035 = 3.5 Mc.

IONOSPHERIC DATA
 to 25 Mc in 0.5 minute
 February 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
035*	G	B	B	B	B	G	B	B	B	B	B	B	B
039	B	057M	047	050	042	B	032	042	027M	B	B	029	034M
G	B	B	B	G	D037R	G	B	B	B	B	B	B	B
G	G	G	048	B	052	050M	C	B	B	B	039	060M	B
C	B	B	B	G	B	B	B	B	041	036	033	B	B
G	G	G	B	B	035	032	070M	038M	055M	B	032M	B	B
C	035	058	042	040M	034M	038M	041	038	049M	048M	044M	B	B
042	035	B	B	B	B	027R	G	B	B	029M	B	B	B
042	049M	065M	064	045M	B	G	B	B	036	035	032M	B	037M
036	B	D041R	050	B	G	G	B	B	B	B	B	B	B
040	D040R	101	056M	B	B	G	B	B	B	B	B	B	B
G	G	B	B	G	B	B	B	B	040	B	B	B	B
G	D039R	D040R	059	080M	080M	074M	088M	084M	B	B	046M	037	028
G	B	G	D041R	044	053	052	048M	030M	B	B	037	036M	069
G	G	G	D042R	066	040M	076	050M	031M	026M	031M	037M	037M	019
G	045	041M	049	048	D035R	032	032M	B	B	B	043M	037M	B
C	C	B	B	B	B	B	032M	B	B	B	022M	029M	032M
B	B	B	B	B	G	G	S	038M	026	B	023	037M	B
G	G	G	B	038	B	035	031	B	B	025	B	025	052M
B	D038S	065	055	D042R	040	033	C	022M	030M	029	D026R	026	B
B	B	053	070M	103M	110M	089	094M	069M	044M	075M	085M	055	036M
050M	067	072	067	078	040	042	032	B	B	B	B	045M	029
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
040	040	058	050	048	040	040	041	038	038	033	033	037	034
7	8	10	13	11	12	12	11	9	10	8	13	12	9
042	047	065	062	078	053	060	070	051	044	042	044	041	044
036	037	041	045	042	036	033	032	031	027	029	029	029	029
6	10	24	17	36	17	27	38	20	17	13	15	12	15

Characteristic: h'Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

February 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	B	B	B	B	B	B	B	G	G	G	160*	G	B
2	B	B	B	B	100	B	B	B	B	G	135	B	120
3	B	B	B	B	B	B	B	B	B	G	G	B	B
4	B	B	3	110	110	B	B	B	G	108	G	G	G
5	B	100	100	B	B	B	B	G	C	110	C	B	B
6	B	B	B	B	B	B	B	B	B	G	G	G	G
7	S	B	B	E	B	B	B	B	110	110	C	111	100
8	B	B	110	108	115	B	B	B	110	106	100	130	B
9	B	B	B	B	B	B	B	100	100	100	100	100	100
10	B	B	B	B	B	B	B	B	120	B	120	130	100
11	B	B	3	B	B	B	B	B	130	130	122	120	110
12	B	B	B	B	B	B	B	B	B	G	G	G	B
13	B	100	118	B	B	B	110	B	B	B	G	132	130
14	105	100	120	100	B	B	B	B	B	G	G	B	G
15	110	B	B	B	B	B	B	B	G	B	G	G	G
16	110	105	102	100	100	102	B	B	G	B	G	100	100
17	B	B	B	B	B	B	B	B	B	B	C	C	B
18	110	B	B	B	B	B	B	S	B	G	B	B	B
19	110	B	B	B	130	128	125	128	B	B	G	G	G
20	105M	108	B	B	110	110	102	B	G	B	B	130	110
21	S	B	E	B	B	B	B	B	B	125	B	B	120
22	130	117	120	B	E	B	B	B	140	140	135	130	120
23	110	100	100	100	100	100	100	100	125	B	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C
29	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median Count	110 8	100 7	110 7	100 5	110 7	106 4	106 4	100 3	120 7	110 8	122 7	130 9	110 1
UQ	110	108	120	109	115	119	118	114	130	128	135	130	110
LQ	108	100	100	100	100	101	101	100	110	107	100	106	100
QR	2	8	20	9	15	18	17	14	20	21	35	24	10

* Tabulation of 160 = 160 km.

SPHERIC DATA
 25 Mc in 0.5 minute
 February 1965

	11	12	13	14	15	16	17	18	19	20	21	22	23
5*	G	B	E	B	B	G	B	B	B	B	B	B	B
5	B	120	120	112	110	B	135	100	130	B	B	110	110
	B	B	B	G	110	B	B	B	B	B	B	B	B
	G	G	120	B	137	130	120	B	B	E	120	110	B
	B	B	B	G	B	B	B	B	100	110	115	B	B
	G	G	B	B	108	165	109	100	090	B	118	B	B
	111	100	100	100	100	100	140	130	125	120	100	B	B
0	130	B	B	B	B	110	G	B	B	100	B	B	B
0	100	100	100	095	B	G	B	B	119	120	110	B	100
0	130	100	120	B	G	G	B	B	B	B	B	B	B
2	120	118	119	B	B	G	B	B	B	B	B	B	B
	G	B	B	G	B	E	B	B	108	B	B	B	B
	132	130	115	110	110	108	110	105	B	B	140	135	130
	B	G	130	120	110	110	110	110	B	B	125	109	109
	G	G	118	110	105	100	105	118	115	125	120	130	120
	100	100	120	120	168	130	U120S	B	B	B	110	110	B
	C	B	B	B	B	B	118	B	B	B	110	110	105
	B	B	B	B	G	G	S	110	110	B	110	110	B
	G	G	B	123	B	160	120	B	B	135	B	120	105
	130	118	110	110	110	110	C	105	102	110	125	110	B
5	B	120	115	110	110	110	105	102	110	110	110	110	110
	130	120	120	110	110	120	110	B	B	B	B	120	118
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
2	130	118	119	110	110	110	114	105	110	115	115	110	110
	9	10	13	11	12	12	12	9	10	8	13	12	9
5	130	120	120	120	110	130	120	114	119	122	122	120	119
0	106	100	113	110	109	109	108	102	103	110	110	110	105
5	24	20	7	10	1	21	12	12	16	12	12	10	14

Characteristic: Type of Es

IONOSPHERIC D
Sweep: 1 Mc to 25 Mc i

February 196

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (GMT + 7 hours)

[illegible]

SPHERIC DATA
to 25 Mc in 0.5 minute
February 1965

[illegible]

MEDIAN VALUES FEBRUARY 1965

Hour Local	fmin (Mc)	foF2 (Mc)	M(3000)F2	h'F2 (km)	h'F (km)	foF1 (Mc)	M(3000)F1	foE* (Mc)	h'E (km)	fbEs (Mc)	foEs (Mc)	h'Es (km)
00	2.1	4.3	3.38	-	248	-	-	-	-	2.6	3.6	110
01	1.6	3.9	3.40	-	240	-	-	-	-	2.6	4.5	100
02	1.6	3.5	3.40	-	234	-	-	-	-	1.8	3.4	110
03	1.6	2.9	3.53	-	240	-	-	-	-	2.1	2.3	100
04	1.6	2.1	3.53	-	250	-	-	-	-	1.7	2.1	110
05	1.7	2.1	3.20	-	290	-	-	-	-	-	3.1	106
06	1.9	-	-	-	-	-	-	-	-	-	3.3	106
07	2.1	4.3	3.35	-	250	-	-	-	-	2.6	3.0	100
08	2.8	6.2	3.23	-	230	-	-	-	120	2.9	3.1	120
09	3.2	7.1	2.98	320	220	4.2	3.70	-	120	3.4	3.7	110
10	3.5	7.8	2.75	340	216	4.3	3.90	-	120	3.9	4.0	122
11	3.7	7.1	2.80	340	210	4.4	3.95	-	-	4.0	4.0	130
12	3.9	7.0	2.62	380	200	4.4	4.08	-	-	4.6	5.8	118
13	3.9	6.9	2.63	371	200	4.4	4.03	-	-	5.0	5.0	119
14	3.6	7.1	2.75	360	200	4.4	3.90	-	-	4.4	4.8	110
15	3.4	7.5	2.75	340	200	4.3	3.70	-	-	3.7	4.0	110
16	3.0	7.7	2.90	310	220	4.2	3.65	-	-	3.4	4.0	110
17	2.6	8.3	3.00	285	240	-	-	-	-	3.1	4.1	114
18	2.4	8.2	3.05	-	250	-	-	-	-	3.1	3.8	105
19	2.3	7.7	3.10	-	260	-	-	-	-	2.7	3.8	110
20	2.4	7.0	3.15	-	245	-	-	-	-	2.6	3.3	115
21	2.5	6.5	3.20	-	245	-	-	-	-	2.8	3.3	115
22	2.4	5.7	3.30	-	240	-	-	-	-	2.9	3.7	110
23	2.3	4.9	3.35	-	240	-	-	-	-	2.4	3.4	110

* Insufficient data for reliable median.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
FEBRUARY 1965

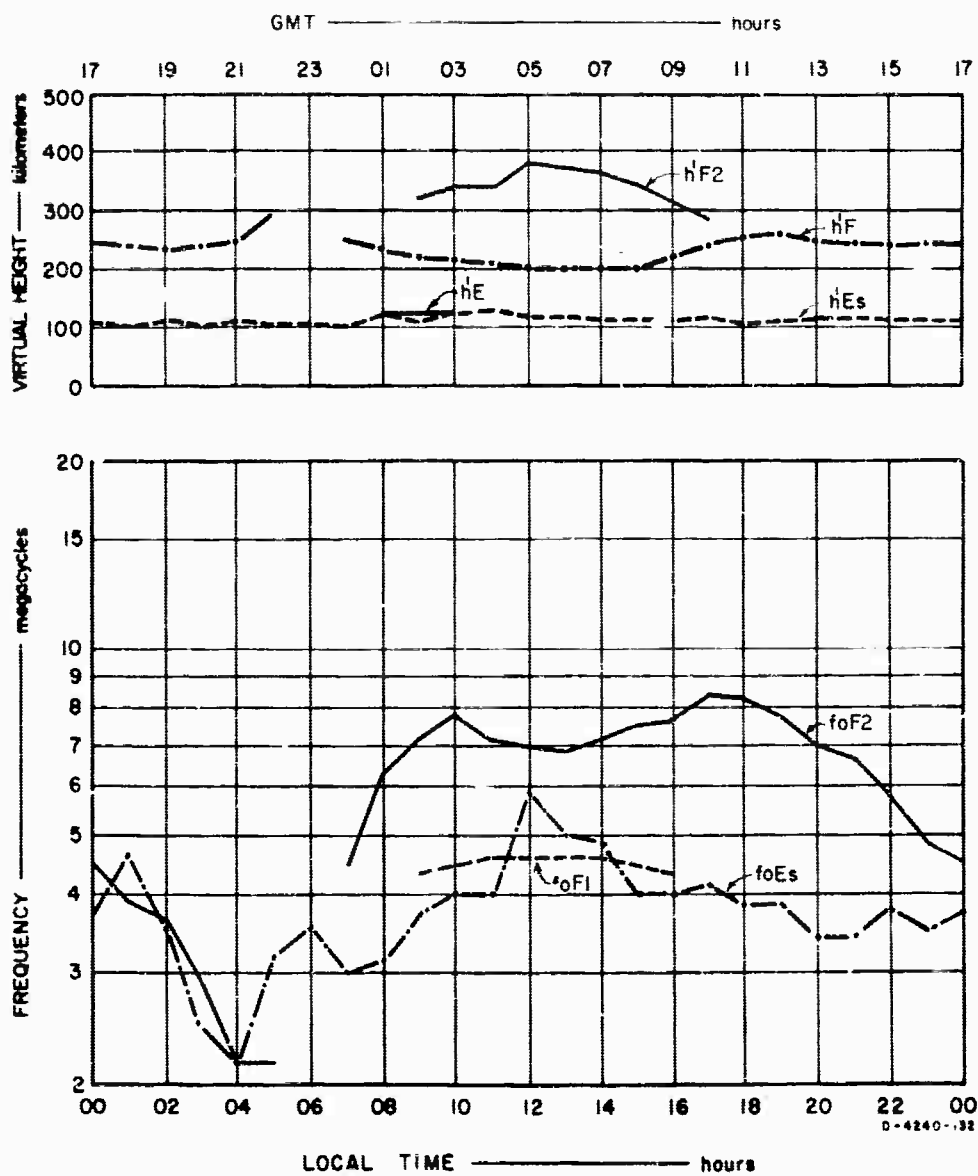


FIG. 1 SUMMARY GRAPHS

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